Test Report
Stability of Mix

Project Name	Improvements to roads and drains from Baglur Main Road to Shivapura in Ward No.05
Client	Executive Engineer, Project Division Yalahanka
Job No	MCTPL/BBMP/Project-YNK/2017-2018/QR/03
Mix Type	Bituminous Concrete (BC)
Contractor	M/s KRIDL
Test Method	Specification for Road & Bridge Works, MORT&H, Revision V.
Location	Bay
Material	Bituminous Concrete mix
Sample No	2
Date	29-May-2018

Sl. No.	Description	Unit	Test 1	Requirements as per MORT&H
1	Marshal Stability	KN	9.6	9 KN (min)
2	Marshal Flow	mm	3.4	2 – 4 mm
3	Percent of Air Voids in mix	%	4.7	3 – 6 %
4	Percent of Voids in Mineral Aggregates filled with Bitumen	%	73	65 – 75 %
5	Density	g/cc	2.23	2.22 g/cc

Note:

i. The results indicated above are based on the tests carried out on the sample at site.
ii. The results relate only to the items tested.
iii. This test report should not be reproduced except in full, without written approval of this laboratory.
iv. Any query regarding the report must be reported immediately.

For Mecadez Core Technologies Private Limited

Authorised Signatory

Mecadez Core Technologies Private Limited * MECADEZ

Test Report
Stability of Mix

Project Name	Improvements to roads and drains from Baglur Main Road to Shivapura in Ward No.05
Client	Executive Engineer, Project Division Yalahanka
Job No	MCTPL/BBMP/Project-YNK/2017-2018/QR/03
Mix Type	Bituminous Concrete (BC)
Contractor	M/s KRIDL
Test Method	Specification for Road & Bridge Works, MORT&H, Revision V.
Location	Bay
Material	Bituminous Concrete mix
Sample No	3
Date	28-May-2018

Sl. No.	Description	Unit	Test 1	Requirements as per MORT&H
1	Marshal Stability	KN	9.3	9 KN (min)
2	Marshal Flow	mm	3.43	2 – 4 mm
3	Percent of Air Voids in mix	%	4.6	3 – 6 %
4	Percent of Voids in Mineral Aggregates filled with Bitumen	%	75	65 – 75 %
5	Density	g/cc	2.22	2.22 g/cc

Note:

i. The results indicated above are based on the tests carried out on the sample at site.
ii. The results relate only to the items tested.
iii. This test report should not be reproduced except in full, without written approval of this laboratory.
iv. Any query regarding the report must be reported immediately.

For Mecadez Core Technologies Private Limited

Authorised Signature

Test Report
Stability of Mix

Project Name	Improvements to roads and drains from Baglur Main Road to Shivapura in Ward No.05
Client	Executive Engineer, Project Division Yalahanka
Job No	MCTPL/BBMP/Project-YNK/2017-2018/QR/03
Mix Type	Bituminous Concrete (BC)
Contractor	M/s KRIDL
Test Method	Specification for Road & Bridge Works, MORT&H, Revision V.
Location	Bay
Material	Bituminous Concrete mix
Sample No	4
Date	27-May-2018

Sl. No.	Description	Unit	Test 1	Requirements as per MORT&H
1	Marshal Stability	KN	9.6	9 KN (min)
2	Marshal Flow	mm	3.5	2 – 4 mm
3	Percent of Air Voids in mix	%	4.6	3 – 6 %
4	Percent of Voids in Mineral Aggregates filled with Bitumen	%	71.35	65 – 75 %
5	Density	g/cc	2.23	2.22 g/cc

Note:

i. The results indicated above are based on the tests carried out on the sample at site.
ii. The results relate only to the items tested.
iii. This test report should not be reproduced except in full, without written approval of this laboratory.
iv. Any query regarding the report must be reported immediately.

For Mecadez Core Technologies Private Limited

Mecadez Core Technologies Private Limited * MECADEZ

Authorised Signature

Test Report
Binder Content and Mix Gradation

Project Name	Improvements to roads and drains from Baglur Main Road to Shivapura in Ward No.05
Client	Executive Engineer, Project Division Yalahanka
Job No	MCTPL/BBMP/Project-YNK/2017-2018/QR/03
Mix Type	Bituminous Concrete (BC)
Contractor	M/s KRIDL
Test Method	Specification for Road & Bridge Works, MORT&H, Revision V.
Location	Bay
Material	Bituminous Concrete mix
Sample No	1
Date	28-May-2018

Sl. No.	Description	Unit	Computation	Test Result
1	Weight of Empty bowl before Extraction (E)	gm	Eb	1080
2	Weight of bowl + Sample before extraction (w_a)	gm	w_{sb}	1690
3	Weight of Sample taken for the test (S_b)	gm	$S_b = w_{sb} - Eb$	610
4	Weight of bowl + Sample after extraction (w_a)	gm	w_{sa}	1652
5	Weight of Sample after extraction (i.e. washed aggregates) (S_a)	gm	$S_a = w_{sa} - Eb$	572
6	Weight of Filter paper before extraction (F_b)	gm	F_b	2
7	Weight of Filter paper after extraction (F_a)	gm	F_a	4
8	Weight of filler on filter paper (F_d)	gm	$F_d = F_b - F_a$	2
9	Weight of Bitumen without considering Filter paper (W_b)	gm	W_b	38
10	Weight of the Bitumen with considering Filter paper (W_a)	gm	$W_a = w_b - F_d$	36
11	Percentage of the Bitumen (i.e. Binder Content) ($\%_b$)	(%)	W_a/ SbX100	5.90

Sl. No.	I.S. Sieve size (mm)	Weight Retained (gm)	Percentage of weight Retained (%)	Cumulative Percentage of weight retained (%)	Cumulative % of Passing		Remarks
					Test Result	Gradation Limits as per MORT&H	
1	19.00	0.00	0.00	0.00	100.00	100.00	Gradation satisfies the MORT&H Grade II Specification for Bituminous Concrete
2	13.20	676.00	16.90	16.90	83.10	72-100	
3	9.50	433.00	10.83	27.73	72.28	70-88	
4	4.75	235.00	5.88	33.60	66.40	53-71	
5	2.36	476.00	11.90	45.50	54.50	42-58	
6	1.18	340.00	8.50	54.00	46.00	34-48	
7	0.60	435.00	10.88	64.88	35.13	26-38	
8	0.30	430.00	10.75	75.63	24.38	18-28	
9	0.15	378.00	9.45	85.08	14.93	12-20)	
10	0.08	360.00	9.00	94.08	5.93	(4-10)	

For Mecadez Core Technologies Private Limited

Authorised Signature

Test Report
Binder Content and Mix Gradation

Project Name	Improvements to roads and drains from Baglur Main Road to Shivapura in Ward No.05
Client	Executive Engineer, Project Division Yalahanka
Job No	MCTPL/BBMP/Project-YNK/2017-2018/QR/03
Mix Type	Bituminous Concrete (BC)
Contractor	M/s KRIDL
Test Method	Specification for Road & Bridge Works, MORT&H, Revision V.
Location	Bay
Material	Bituminous Concrete mix
Sample No	2
Date	29-May-2018

Sl. No.	Description	Unit	Computation	Test Result
1	Weight of Empty bowl before Extraction (E)	gm	Eb	1080
2	Weight of bowl + Sample before extraction (w_s)	gm	w_{sb}	1700
3	Weight of Sample taken for the test (S_b)	gm	$S_b = w_{sb} - Eb$	620
4	Weight of bowl + Sample after extraction (w_s)	gm	w_{sa}	1661
5	Weight of Sample after extraction (i.e. washed aggregates) (S_a)	gm	$S_a = w_{sa} - Eb$	581
6	Weight of Filter paper before extraction (F_b)	gm	F_b	2
7	Weight of Filter paper after extraction (F_a)	gm	F_a	4
8	Weight of filler on filter paper (F_d)	gm	$F_d = F_b - F_a$	2
9	Weight of Bitumen without considering Filter paper (W_b)	gm	W_b	39
10	Weight of the Bitumen with considering Filter paper (W_a)	gm	$W_a = w_b - F_d$	37
11	Percentage of the Bitumen (i.e. Binder Content) ($\%_B$)	(%)	W_a/ SbX100	5.97

Sl. No.	I.S. Sieve size (mm)	Weight Retained (gm)	Percentage of weight Retained (%)	Cumulative Percentage of weight retained (%)	Cumulative % of Passing		Remarks
					Test Result	Gradation Limits as per MORT&H	
1	19.00	0.00	0.00	0.00	100.00	100.00	Gradation satisfies the MORT&H Grade II Specification for Bituminous Concrete
2	13.20	676.00	16.90	16.90	83.10	72-100	
3	9.50	433.00	10.83	27.73	72.28	70-88	
4	4.75	235.00	5.88	33.60	66.40	53-71	
5	2.36	476.00	11.90	45.50	54.50	42-58	
6	1.18	340.00	8.50	54.00	46.00	34-48	
7	0.60	435.00	10.88	64.88	35.13	26-38	
8	0.30	430.00	10.75	75.63	24.38	18-28	
9	0.15	378.00	9.45	85.08	14.93	12-20)	
10	0.08	360.00	9.00	94.08	5.93	(4-10)	

For Mecadez Core Technologies Private Limited

Authorised Signature

Test Report
Binder Content and Mix Gradation

Project Name	Improvements to roads and drains from Baglur Main Road to Shivapura in Ward No.05
Client	Executive Engineer, Project Division Yalahanka
Job No	MCTPL/BBMP/Project-YNK/2017-2018/QR/03
Mix Type	Bituminous Concrete (BC)
Contractor	M/s KRIDL
Test Method	Specification for Road & Bridge Works, MORT&H, Revision V.
Location	Bay
Material	Bituminous Concrete mix
Sample No	3
Date	27-May-2018

Sl. No.	Description	Unit	Computation	Test Result
1	Weight of Empty bowl before Extraction (E)	gm	Eb	1080
2	Weight of bowl + Sample before extraction (w_s)	gm	w_{sb}	1710
3	Weight of Sample taken for the test (S_b)	gm	$S_b = w_{sb} - Eb$	630
4	Weight of bowl + Sample after extraction (w_s)	gm	w_{sa}	1672
5	Weight of Sample after extraction (i.e. washed aggregates) (S_a)	gm	$S_a = w_{sa} - Eb$	592
6	Weight of Filter paper before extraction (F_b)	gm	F_b	2
7	Weight of Filter paper after extraction (F_a)	gm	F_a	4
8	Weight of filler on filter paper (F_d)	gm	$F_d = F_b - F_a$	2
9	Weight of Bitumen without considering Filter paper (W_b)	gm	W_b	38
10	Weight of the Bitumen with considering Filter paper (W_a)	gm	$W_a = w_b - F_d$	36
11	Percentage of the Bitumen (i.e. Binder Content) ($\%_B$)	(%)	W_a/ SbX100	5.71

Sl. No.	I.S. Sieve size (mm)	Weight Retained (gm)	Percentage of weight Retained (%)	Cumulative Percentage of weight retained (%)	Cumulative % of Passing		Remarks
					Test Result	Gradation Limits as per MORT&H	
1	19.00	0.00	0.00	0.00	100.00	100.00	Gradation satisfies the MORT&H Grade II Specification for Bituminous Concrete
2	13.20	690.00	17.25	17.25	82.75	72-100	
3	9.50	405.00	10.13	27.38	72.63	70-88	
4	4.75	225.00	5.63	33.00	67.00	53-71	
5	2.36	470.00	11.75	44.75	55.25	42-58	
6	1.18	300.00	7.50	52.25	47.75	34-48	
7	0.60	400.00	10.00	62.25	37.75	26-38	
8	0.30	450.00	11.25	73.50	26.50	18-28	
9	0.15	365.00	9.13	82.63	17.38	12-20)	
10	0.08	470.00	11.75	94.38	5.63	(4-10)	

For Mecadez Core Technologies Private Limited

Authorised Signatory

Test Report
Binder Content and Mix Gradation

Project Name	Improvements to roads and drains from Baglur Main Road to Shivapura in Ward No.05
Client	Executive Engineer, Project Division Yalahanka
Job No	MCTPL/BBMP/Project-YNK/2017-2018/QR/03
Mix Type	Bituminous Concrete (BC)
Contractor	M/s KRIDL
Test Method	Specification for Road & Bridge Works, MORT&H, Revision V.
Location	Bay
Material	Bituminous Concrete mix
Sample No	4
Date	27-May-2018

Sl. No.	Description	Unit	Computation	Test Result
1	Weight of Empty bowl before Extraction (E)	gm	Eb	1080
2	Weight of bowl + Sample before extraction (w_s)	gm	w_{sb}	715
3	Weight of Sample taken for the test (S_b)	gm	$S_b = w_{sb} - Eb$	718
4	Weight of bowl + Sample after extraction (w_s)	gm	w_{sa}	670
5	Weight of Sample after extraction (i.e. washed aggregates) (S_a)	gm	$S_a = w_{sa} - Eb$	-410
6	Weight of Filter paper before extraction (F_b)	gm	F_b	2
7	Weight of Filter paper after extraction (F_a)	gm	F_a	4
8	Weight of filler on filter paper (F_d)	gm	$F_d = F_b - F_a$	2
9	Weight of Bitumen without considering Filter paper (W_b)	gm	W_b	45
10	Weight of the Bitumen with considering Filter paper (W_a)	gm	$W_a = w_b - F_d$	43
11	Percentage of the Bitumen (i.e. Binder Content) ($\%_B$)	(%)	W_a/ SbX100	5.99

Sl. No.	I.S. Sieve size (mm)	Weight Retained (gm)	Percentage of weight Retained (%)	Cumulative Percentage of weight retained (%)	Cumulative % of Passing		Remarks
					Test Result	Gradation Limits as per MORT&H	
1	19.00	0.00	0.00	0.00	100.00	100.00	Gradation satisfies the MORT&H Grade II Specification for Bituminous Concrete
2	13.20	667.00	16.68	16.68	83.33	72-100	
3	9.50	416.00	10.40	27.08	72.93	70-88	
4	4.75	233.00	5.83	32.90	67.10	53-71	
5	2.36	490.00	12.25	45.15	54.85	42-58	
6	1.18	314.00	7.85	53.00	47.00	34-48	
7	0.60	419.00	10.48	63.48	36.53	26-38	
8	0.30	382.00	9.55	73.03	26.98	18-28	
9	0.15	380.00	9.50	82.53	17.48	12-20)	
10	0.08	370.00	9.25	91.78	8.22	(4-10)	

For Mecadez Core Technologies Private Limited

Authorised Signature